

CONTAINER BARGE FEEDER SERVICE STUDY

Bridgeport, New Haven, New London, Norwich



**Prepared By:
Connecticut Department of Transportation
The Office of Intermodal Planning
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Summary

The Connecticut Department of Transportation (ConnDOT) has conducted this study to determine the need and opportunity for establishing a Container Barge Feeder Service along Long Island Sound between the Port of New York and New Jersey (NY&NJ) and the various deep water ports in Connecticut. The feasibility of providing container barge service in Connecticut focuses on the existing ports in Bridgeport, New Haven, and New London. The emphasis of this study is to determine the opportunity to promote the diversion of truck traffic from the congested southwest corridor roadways (particularly Interstate 95) to waterborne travel as an alternative mode of transportation. The methods of container barge service operations that are considered in this investigation are Roll On/Roll Off (RO/RO) and Lift On/Lift Off (LO/LO).

This study investigated existing bulk and container barge services along Long Island Sound. Various barge and port operators provided information regarding their operations and physical assets. The existing terminal facilities in the study corridor were analyzed to determine their appropriateness for accommodating a new container barge feeder service. New terminal requirements were then identified that would be needed in addition to the existing infrastructure.

The South Central Regional Council of Governments and the Greater Bridgeport Regional Planning Agency have been conducting an independent assessment of container barge service concurrently with ConnDOT's investigation. The service characteristics of their studies have focused on fully functioning long-term barge operations. ConnDOT has reviewed this information and has conducted an additional investigation to identify the opportunity for implementing a new barge feeder service.

The findings of the investigations conducted for this study indicate that a new container barge feeder service may be feasible. Implementation of such a service in Connecticut, either in the near or long-term, may be dependent upon the type of operation pursued (RO/RO or LO/LO) and the associated infrastructure requirements. The interest and capabilities of the Port of NY&NJ would be a primary consideration in pursuing a service for Connecticut. A RO/RO barge operation to any Connecticut port could require operational or infrastructure modification in the Port of NY&NJ to provide a ramp system that would accommodate such a service. Constructing a barge with a self-contained ramp system could reduce the extent of infrastructure modifications required for a RO/RO service at the Port of NY&NJ.

The Greater Bridgeport Regional Planning Agency reports that a LO/LO service to Bridgeport may not be as economical as a RO/RO service.

The largest Connecticut market area for international marine containers is the Hartford/Springfield market area. The trucking costs from the Port of NY&NJ to the Hartford/Springfield market area could be less expensive than a LO/LO type of service. Funding for a new service at Bridgeport could be made available through the Bridgeport Port Authority.

The assessment conducted by the South Central Regional Council of Governments for the Port of New Haven (NH) indicates that a LO/LO service would be the most viable type of operation (particularly in the near term) for that port. The Port of NH does not have an established Municipal Port Authority. Funding for a service at the Port of NH could be made available through the City of New Haven, or through a Port Authority, which would need to be established. The Port of NH is the closest port to the Hartford/Springfield market area. Barging containers to the Port of NH would allow the containers to entirely bypass the congested Interstate 95 (I-95) southwest corridor.

The State Pier in New London will have a number of construction projects undertaken in the next two to three years. This would preclude use of the facility for a new barge service during this time. The market area in Connecticut is also of a sufficient distance from New London to reduce that attractiveness of this port for this type of service.

The capital costs for a new container feeder barge service would vary from \$4,612,000 to \$17,994,986, depending on the equipment and infrastructure requirements. For a RO/RO type of barge operation, additional capital investment would be required at either the Port of NY&NJ facilities, or in a modified or new barge. Operating costs would also vary from \$873 to \$1,370 per container. The costs, which have been developed by the regional studies, vary, primarily due to differences in anticipated operational characteristics, costs and capital requirements. The actual operating and capital costs would be determined based upon the development of a detailed operations plan for a new service.

A detailed operations plan should be developed to implement a “start-up” barge service between the Port of NY&NJ and either the Port of Bridgeport or the Port of NH. Such a plan and “start-up” service would demonstrate the actual market viability for a long-term investment. It is anticipated that, should funding become available to initiate such a service in the near term, implementation could be facilitated for the Port of Bridgeport through the established Bridgeport Port Authority.

It should be noted that ConnDOT must operate within the financial capacity of the Special Transportation Fund. ConnDOT’s capital and operating budgets are fully programmed and do not include the financial

**resources needed to initiate a new container barge feeder service.
Additional funding sources will be required to pursue such an effort.**

Chapter I

Study Background and Purpose

As a result of a specific legislative initiative (Public Act No. 00-148, Section 23), the Connecticut Department of Transportation (ConnDOT) has conducted the Container Barge Feeder Service and the Intrastate Passenger Commuter Ferry Study. The legislation directs ConnDOT to investigate the opportunity for increasing waterborne transportation. This report documents the study findings regarding the potential for implementing a container barge feeder service between the Connecticut ports and the Ports of New York and New Jersey (NY&NJ). The findings of the Intrastate Passenger Commuter Ferry Study (February 2001) are documented in a separate report.

The Connecticut ports that have been assessed in determining the potential for a container barge feeder service are the existing ports in Bridgeport, New Haven, and New London (Figure 1). This study also examines a new intermodal break-bulk barge operation in Norwich.

This study has been conducted in coordination with the South Central Regional Council of Governments, Greater Bridgeport Regional Planning Agency, and the South Western Regional Planning Agency, the

Container Barge Feeder Service Study Bridgeport, New Haven, New London, Norwich

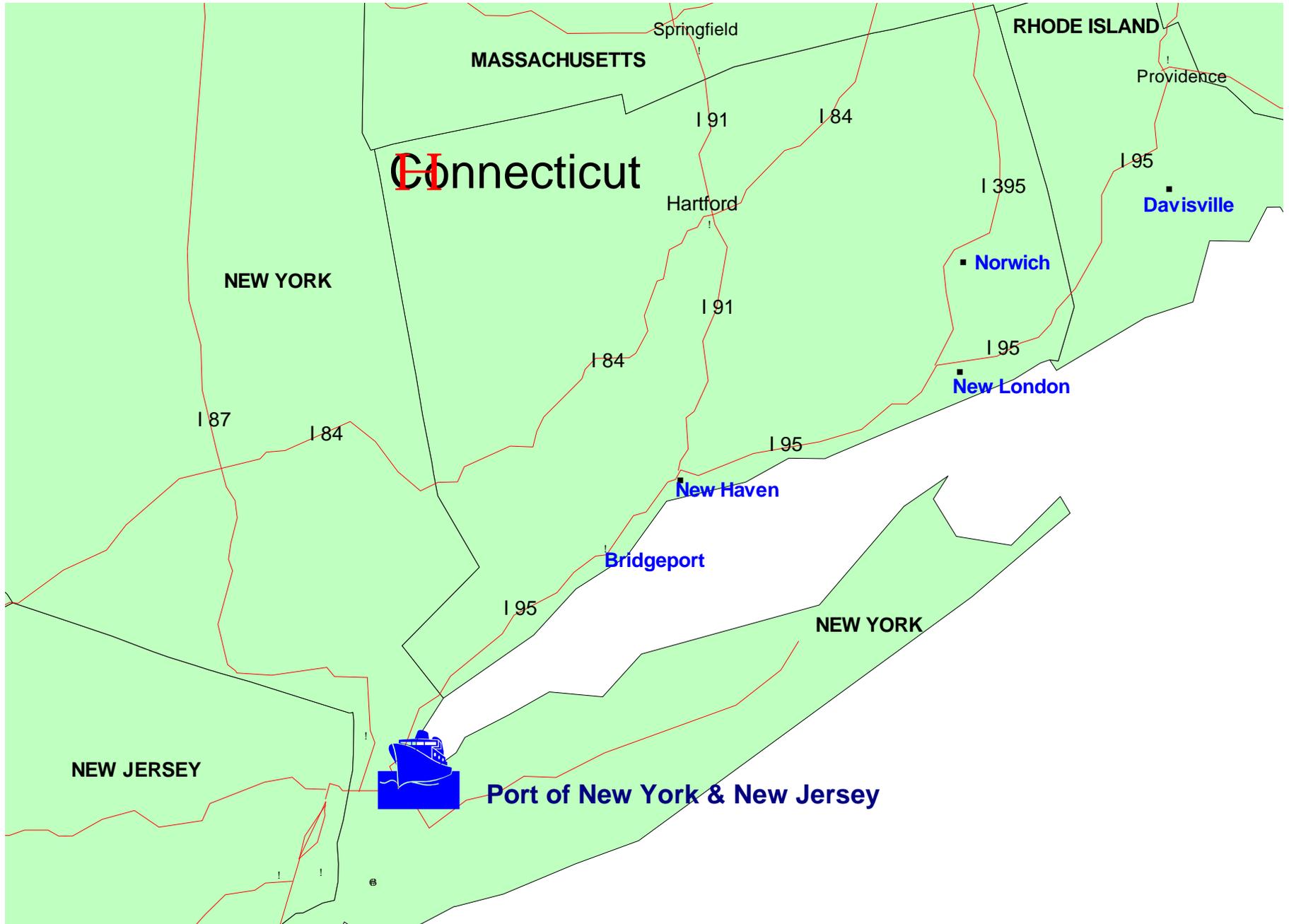


Figure # 1

first officials of the potential service areas, current and potential barge operators, and various port operators.

The Port Authority of New York and New Jersey (PANY&NJ) is in the process of developing a Port Inland Distribution Network (PIDN). This is a network of feeder ports and terminals that would be used to attract cargo destined for the Port of NY&NJ's market areas. Connecticut is considered as a participant and a partner in the development of the PIDN by the PANY&NJ. The PIDN has taken into consideration the market areas that are served by the Port of NY&NJ. These market areas were assessed as to the methods of transportation that are currently used to service that market area and the alternative methods that could be used. Intermodal rail, barge and truck are the primary modes of transportation being studied within the PIDN. The assessments relative to the types of transportation systems that could best serve an area are based on the physical infrastructure that exists and the distance each market area is from the Port of NY&NJ. The Connecticut ports of Bridgeport and New Haven were initially considered as being within the trucking distribution area since the distance from the Port of NY&NJ is within the 75-mile radius, that the PANY&NJ feels is most effectively served by truck.

The owners and operators of the ports in Connecticut became aware of the possibility of market opportunities for container feeder barge

services through regional freight meetings. Connecticut's interest in the PANY&NJ's PIDN initiated a series of studies to determine the feasibility of a container feeder barge service using a port or ports in Connecticut. The PANY&NJ is anxious to assist in promoting the development of the physical infrastructure of a feeder distribution system in order to begin the required negotiations with the transportation community to attract the cargo necessary to make a container feeder barge service effective. The PANY&NJ believes that a system-wide distribution network could induce the major shipping companies to change the manner in which they currently do business, and transship their cargo by a new transportation service operating in this marketplace. The PANY&NJ intends to meet with all the port and terminal owners and operators within the NY&NJ market area and develop a PIDN before meeting with the members of the shipping community. The PANY&NJ anticipates that by establishing a specific regional distribution system to operate efficiently and provide incentives for the shippers, who ultimately determine the mode of shipment used to deliver containers to their destinations, a PIDN would be used effectively and growth in the transportation industry can be accommodated.

Chapter II

Possible Advantages of Barge Transportation

Traffic congestion is a common occurrence along the Interstate 95 (I-95) corridor, particularly in southwestern Connecticut. Traffic congestion restricts the movement of goods and people, increases the use of energy resources, increases trip times, contributes towards poor air quality, and decreases the productivity of the region. As congestion along the corridor increases, the frequency of accidents increases and environmental degradation will continue.

The transportation of goods by barge can have advantages. Barges use less fuel to move goods compared to other methods of transportation and, therefore, cause less air pollution. The noise generated by barges and the visual intrusion of the barges on Long Island Sound is less than other modes of transportation traveling in the I-95 corridor.

The use of barges to transport goods could reduce the amount of traffic on I-95. A barge service is projected to initially reduce the amount of trucks on I-95 by approximately 385 per week.

It is generally safer to transport goods by barge than by trucks or rail. Trucks travel in mixed traffic with automobiles and other trucks. When

truck-involved accidents occur, they usually result in injuries, loss of cargo and substantial traffic delays. Rail transport generally involves a large number of rail cars in a straight line moving at high speeds. If an accident occurs, usually multiple rail cars are involved resulting in a loss of cargo and the temporary shutdown of the rail line. Barges traveling on the sound are generally traveling well away from other vessels and, therefore, the chances of an accident or loss of goods are relatively limited.

A U.S. Army Corps of Engineers' (COE) study stated that commercial marine navigation has the least damaging impact on air quality compared to truck and rail. The Canadian National Railway also produced a study that supported this conclusion. Their report stated that the amount of emissions produced moving one-million tons of cargo by diesel trucks is 26,500,000 cubic feet, by rail is 7,440,000 cubic feet, and by water is 5,600,000 cubic feet. The movement of goods by barge would emit 33 percent less pollutants than diesel trains and 373 percent less than diesel trucks.

Barge traffic on Long Island Sound would also have little noise impact along the Connecticut shoreline. Barges are transported by tugboat, distant from the shoreline. The engines of a tugboat are below the water line, which muffles the engine noise. Levees and seawalls in urban areas function as a noise barrier to lessen the noise of the operation.

Chapter III

Existing and Planned Commercial Barge Operations

An inventory was compiled of existing and planned commercial barge operations along the study corridor. The transportation of commercial products by barge from Connecticut locations along Long Island Sound is currently performed by various barge operators. Interviews were conducted with barge operators, shippers and receivers currently using barge services. Site inspections were also conducted to assess the operational characteristics of the barge services investigated.

Gateway Terminal

Gateway Terminal (Appendix A, Figure A-1), located in the Port of NH, provides tug and barge services to major transportation centers along the East Coast, Gulf of Mexico, and Puerto Rico, with a fleet of six tugs and nine barges. Three of the tugs are rated for ocean service, and three are rated for coastal service. The general differences between the ocean-going and coastal barges that are involved with this break-bulk and container service is that coastal barges moving break-bulk items along the coast are not inspected, while sea-going barges over a certain size have to be inspected by the Coast Guard. (The barge fleet also has a mix of ocean-going and coastal service ratings.) An ocean-going barge is also structurally stronger than a coastal barge. The tugs, in addition to barge movement duties, also

dock ships in various ports along Long Island Sound, such as New Haven, Bridgeport, and Port Jefferson.

The dry products, that the barges are designed to transport, include steel, sand, salt, and pumice. Products shipped from the port by barge include rock and woodchips for use in other areas. Some of the products coming into New Haven through Gateway terminal by barge include sand and salt, which are transported from the port to its destination by truck.

Buchanan Marine

Buchanan Marine, which is based in New Haven, operates a fleet of approximately 250 barges, ten owned tugs, and an additional ten leased tugs. The company operates along the coastline as opposed to deep-water operations. Service is provided along an area between Tampa Bay, Florida and the Connecticut region. They own various docks and facilities along the Eastern Seaboard to support their operations.

In the Connecticut and New York area, at the present time, Buchanan Marine primarily transports aggregate and scrap metal. The aggregate is transported by barge from the Tilcon Branford facility to New York City. Each barge holds the equivalent of 50 tractor-trailer loads of aggregate. They also barge scrap metal from New Haven to various customers in the Greater New York Metropolitan Area. The Port of NH provides convenient

access to the adjacent Interstate 91 (I-91) and I-95 for the products moving into and out of the port. I-91 connects New Haven with western Massachusetts, Vermont, upstate New York, and Canada. I-95 provides a direct connection between New Haven and the Northeast Corridor, which includes New York City to the south and Boston to the north. Access from I-91 to Interstate 84 (I-84) provides a connection to Pennsylvania and areas to the west. Overnight delivery of goods from the port is available to an area that includes Philadelphia/Baltimore, New York City, Boston, and Montreal.

Buchanan Marine has purchased property in Norwich (Figure A-2) on the Thames River for the purposes of operating an intermodal facility. The site has rail access on the New England Central Railroad and is located within a short drive of Interstate 395 (I-395), which provides a connection to I-95, I-84, and Route 2. Buchanan Marine plans to barge cargo from a site they own in New Jersey on the Upper New York Bay. They will begin the service by primarily handling break-bulk items such as lumber, steel, pipe, sand, and aggregate. The material will be moved from the barges to the train or trucks using a forklift operating on a ramp from the bulkhead with material such as a sand or aggregate. To generate customers from this service, New England Central, along with Buchanan Marine, will publicize and market the service.

Once this operation generates sufficient business, Buchanan Marine has conceptual plans for a RO/RO operation out of New Jersey that could use property they own for service in Bridgeport (Figure A-3) and the Norwich site. Trucks would be used to transport the commodities from these locations to destinations in Connecticut, Rhode Island, and Massachusetts.

Work on the Norwich site is scheduled to be completed in the spring of 2001. A new rail siding has been constructed into this site to allow rail cars to be loaded or unloaded while the main line is in use for other purposes. The surface of the facility has been graded and stone applied to provide a suitable work base. An existing building on site has been upgraded to provide vehicle storage and a maintenance facility.

Columbia Coastal

Columbia Coastal Transport, LLC (Columbia) presently operates a container barge service between the Port of NY&NJ and the Port of Boston. This service operates two trips per week between New York and Boston on Long Island Sound through the Cape Cod Canal.

Discussions with representatives of Columbia indicated that a dedicated barge to a Connecticut port would be more efficient than diverting their current barge operation into a Connecticut port on the trip to

and from Boston. The port would not require a dedicated berth for the barge operation but would require an open berth somewhere in the port when the barge arrives. A minimum of approximately five acres would be needed for this service.

Columbia Coastal Transport believes that service at a Connecticut port could begin with a stacker operation as opposed to using cranes. The advantage of this type of operation could be a substantial savings in capital costs. Used stackers (two are anticipated), which are vehicles that are used to pick up containers from the top and pile them in a stack, could be acquired for approximately \$100,000 per unit as opposed to spending \$3,000,000 on a mobile harbor crane. A moveable ramp from the pier to the barge that the stacker would cross could be constructed for approximately \$40,000. Yard tractors and chassis would also be required – purchasing them used could also reduce the capital costs of the operation. The barges used in this operation would have to be modified to handle the load characteristics of the stackers. The stackers would load sections of the barge by driving from the pier to the barge over a ramp and onto the barge. As the loading of the sections of the barge are completed, the ramp would be moved so that the next section of the barge could be completed. This type of operation is presently in use by a terminal operator at the Port of NY&NJ.

Extra travel time would be required to transport a container to a port in Connecticut by barge compared to by truck. This, however, is not seen by Columbia as a major drawback to this service. Columbia indicated that the vast majority of shippers and receivers would be satisfied with the time frame in which a barge operation could distribute their goods. The major hindrance that was identified by Columbia is the expense of transporting a container to Connecticut by barge as opposed to truck. At the present time, transport by truck is less expensive. It has been suggested that there may be an opportunity for some cost reductions in New Jersey by various seaport terminals that would reduce barge-operating costs. Such a cost reduction, however, would not eliminate the differences in cost between the two modes of transportation at the present time.

Chapter IV

Terminal Facilities

Bridgeport

The Port of Bridgeport (Figure A-4) is approximately one-quarter mile south of I-95 at Interchange 29. The New Haven Line railroad is one mile from the main terminal. The port is 52 miles northeast from New York City and 25 nautical miles southwest of New Haven. The port consists of two harbors, Bridgeport Harbor and Black Rock Harbor, which are roughly two miles apart. The main channel into Bridgeport Harbor is 35-feet deep and 400-feet wide. The channel into Black Rock Harbor is 18-feet deep. The primary commodity being transported through the Port of Bridgeport is tropical fruit, with bananas being the main produce. Other commodities include petroleum products, coal, seafood, sand, stone, paper products, used cars and trucks, break-bulk cargo, and containers. The primary terminal operator is Cilco Terminal, which is managed by Logistec Connecticut, Inc. A 110-ton crawler crane and more than 50 forklifts with up to a 15-ton capacity for handling cargo are on site.

The Port of Bridgeport has eight liquid berths of 4,920 feet, two dry bulk berths of 1,150 feet and two general cargo berths of 1,100 feet. The port has 16 acres of open storage. There are three warehouses with 125,000 square feet, of which 25,000 square feet is heated. Two warehouses are refrigerated, with 80,000 square feet of storage. An additional 20 acres can

be used for outside storage and staging areas. The port presently has land available at a former industrial site, known as the Cartec site, with access from Stratford and Seaview Avenues that could accommodate a container feeder barge operation.

The Bridgeport Port Authority could provide land to an operator of a container barge feeder service for their operations. The Cartec site is approximately 50 acres, but most of the site has been set aside by the Bridgeport Port Authority for the development of a shipyard. The remaining land that may be available which could be used for a barge service would be approximately three acres by the harbor and another 14 acres situated by Stratford Avenue. These two parcels are approximately one-half mile apart without a direct connection. Therefore, an access road between the sites would need to be constructed.

Powerhouse Creek is located adjacent to the three-acre parcel by the harbor and is approximately 625-feet long and 125-feet wide. This creek could provide ample room for barges to dock, as the barges that are being considered for this operation are 400-feet long by 100-feet wide by 18-feet deep. The creek would need to be dredged to approximately 18 feet to deepen the berth to allow the barges to use this location. The dredged material could be deposited on site to raise the elevation above the 100-year flood boundary, which presently extends 150 feet into the site.

The quay to the northeast of Powerhouse Creek could also be reconstructed to be used for this service. At the present time the quay is in poor condition and could not be used for this service. A temporary accommodation could be provided to allow a new service to begin while the creek is being dredged or the quay is being reconstructed. A barge could be moored adjacent to the quay with a ramp from the barge to the quay, the container barge could tie up to the moored barge, and a ramp could be placed between the two barges to allow the off-loading of the containers.

The two parcels that could be used for this service would have to be paved to sufficient depth to support the heavy loads of the containers. An office and scale facility would also be required for this operation, as well as a maintenance facility for the upkeep of the required equipment. A warehouse to provide an area for stripping (unloading) the overweight containers and stuffing (reloading) trucks with their contents prior to on-road distribution would need to be constructed on this property. A security gate and fences would also be needed. Storage areas for full containers, empty containers, chassis, trucks waiting to be stuffed, and the equipment needed for the daily operation would also have to be developed.

Bridgeport Port is not currently equipped to process containers. Therefore, the procurement of various pieces of equipment would be

required. For a RO/RO operation, yard tractors would be required to transport the arriving containers from the barge to the storage area and then load the containers to be shipped at the staging area onto the barge. If a storage limitation problem develops for the containers being stored on wheels, a grounded operation would be required where the containers are stacked. This situation requires toploaders to take the containers from the chassis and stack them to unload, then reverse the process to reload. A crane to move the ramps on the barges could also be required for this operation.

Buchanan Marine owns a piece of property in Bridgeport on Black Rock Harbor that can also potentially serve as a container feeder barge operation terminal. This site is in an area that has both commercial and residential development. It is a short distance from I-95 Interchange 28. The company has a storage yard and scale house along South Street on Black Rock Harbor. No dredging would be needed, as barges are already using the channel in front of the site for other purposes. A crane, stacker, toploader, and yard tractors would be needed on site if a RO/RO operation were used. A warehouse would be needed on site to strip overweight containers and stuff the contents into other trucks. This property does not have sufficient acreage for a warehouse to be built, nor is there sufficient property adjacent to it. At the present time Buchanan Marine has no plans to handle containers on this site but may use the area for bulk items in

association with a barge service they plan to operate between the Port of NY&NJ and Norwich, Connecticut.

New Haven

The Port of New Haven (NH) is located approximately one-quarter of a mile south of I-95 Interchange 49. It should be noted that access between the Port of NH and I-95 is expected to be modified (improved) from its current situation. This is due to plans that are being developed to expand and reconfigure I-95 through the area. The I-95 project may also affect properties within the port area. The Port of NH is 68 nautical miles northeast of New York City, 25 nautical miles northeast of Bridgeport, and 179 nautical miles southeast of Boston. The channel is 35-feet deep and 400- to 800-feet wide. The facilities for deep-draft vessels are situated on the east and northeast sides of the harbor. The present commodities transported into and out of New Haven include petroleum products, chemicals, scrap metal, lumber, metallic products, cement, sand, stone, salt, and general break-bulk cargo.

There are four dry bulk berths of 2,470 feet, five general cargo berths of 3,540 feet, and eighteen liquid bulk berths of 9,355 feet. The bulk and break-bulk terminal operators on site are Gateway Terminal and Logistec Connecticut, Inc. The port has 14 warehouses with 380,000 square feet. There are cranes with up to 250-ton capacity and five mobile cranes. A

railway connection operated by the Providence and Worcester Railroad is planned to be reconstructed. Fifty-six acres are available for open storage.

The Port of NH presently has two terminal operators who are capable of operating a container barge feeder terminal. Gateway Terminal has two heavy lift cranes on one main pier that are approximately 720-feet long. A container barge could dock at this pier with no modifications needed to the pier or dredging of the waterway.

Gateway Terminal's location on the harbor, however, does not have sufficient available acreage to stage, store or process containers. The company does have an off-site storage facility in the port area that could be used for this purpose. A warehouse for the processing of the containers would need to be constructed. Yard tractors would have to transport the containers from the terminal to the storage and staging site over city streets, which could present a problem for transferring overweight containers. The yard tractors and chassis would have to meet over-the-road requirements, as opposed to the minimally accepted standards for equipment that is exclusively used in the terminal areas.

Logistec is another terminal operator in New Haven who could operator a container barge feeder terminal. For handling dry cargo, they have an inlet into their facility with a quay on the north side approximately

550-feet long and a pier on the south side approximately 650-feet long. No dredging would be required for vessels to access this site, as it is presently being used by ocean-going vessels. The terminal site is paved and has existing warehouses located on it.

The two bulk and break-bulk terminals operating in the port could not accommodate a container barge feeder service without the addition of a dedicated berth. Logistec presently accommodates approximately 180 ships a year in New Haven and could not guarantee a berth for a regularly scheduled container barge feeder service. As previously noted, Gateways' terminal does not have available acreage to handle a container service, but they do have off-site storage available. The construction of an additional berth, the extra moves of the containers involved with that sort of operation, the additional equipment that would be required to move the containers over a long distance, along with the restrictions associated with transporting overweight containers over the public roads, would pose operational hurdles to overcome before a container barge service could be implemented.

A fuel tank farm located south of I-95 near the intersection of Water Street, East Street, and Forbes Avenue may be considered for development as a container barge terminal. This site has ample space to construct a

container barge terminal. The city of New Haven has begun to negotiate with the property owner to acquire this property for redevelopment.

This site has an inlet with deep water that could provide access for the container barges without dredging being required. On the east side of the inlet, there is 520 feet of existing docks. There is also a dock in the inlet that is 700-feet long. On the west side of the inlet, there is an existing quay that is 700-feet long and has 300 feet of frontage that can be used for a quay. The water depth leading up to the inlet is 39-feet deep.

The property is considered to be at high risk for the presence of contaminants. The fuel storage tanks would need to be removed and environmental remediation completed. The cost and time that would be required to decontaminate this site and develop it as a terminal can be expected to be substantial. The equipment needed to operate the service, such as yard tractors, stackers, toploaders, cranes, and other equipment, would need to be purchased for this operation. Harbor cranes for the loading and off-loading of the barge would also be required.

A warehouse to handle the stripping of the overweight containers and the repacking of trucks would be required. A garage will also have to be constructed for the storage and maintenance of the equipment used for the operation. The site would have to be fenced and lighted for security

purposes. A gatehouse and scale would be needed to process the trucks that bring the containers into and out of the terminal. An area for the storage of chassis would be needed if the operation evolves from a wheeled operation to a grounded operation.

Bucanan Marine has an operation in New Haven on the east shore of the Quinnipiac River situated to the north of Ferry Street. They primarily service their fleet of barges and construct new ones at this location. They do not have sufficient area in this yard to unload, move, or store containers on site. They have not expressed an interest in providing container barge service at this site.

New London

The Port of New London (Figure A-5) is located 12 miles west of Rhode Island on the Thames River and is within one mile south of I-95 at Interchange 83. The channel into the port is 40-feet deep and 500-feet wide. Products currently transported into and out of New London are primarily lumber, and a limited amount of coal, sand, stone, and general break-bulk cargo. The break-bulk terminal operator is Logistec Connecticut, Inc. A direct port/railroad connection is provided by New England Central Railroad, which provides access to United States and Canadian rail networks. There is a 1,000-foot long pier that has recently been reconstructed on the eastern side. Two berths are located alongside the

pier. A 50,000-square foot warehouse is available on site. The port has the capability to load 75 trucks a day. Ten acres are available for open storage on port property, but there are no cranes on site. If a crane is needed, it is leased from a local crane service.

The terminal operator in New London has the capability to operate a container feeder barge service at this site. The pier or quay can accommodate a barge and the transfer of the containers. The operator would have to provide equipment for a new container operation since there are currently no cranes, stackers or yard tractors on site to move the containers from barges to trucks, trains, or storage facilities. A scale would also have to be placed on site.

Norwich

Norwich has a new intermodal transportation terminal with barge, rail, and truck capability that is owned and operated by Buchanan Marine. This facility is approximately 11 miles north of the Port of New London on the Thames River. This terminal is currently being developed to process bulk and break-bulk commodities. Long-range plans are to have the capability to handle containers, should the market develop. The site is located along the Thames River adjacent to Route 32 and a short distance east of I-395. The New England Central rail line is adjacent to the terminal.

The commodities to be handled at this site will include lumber, sand, stone, pipes, and steel. These commodities will be shipped from Buchanan's facility in New Jersey on Upper New York Bay. Buchanan Marine provides one-day, round-trip service with barges they use to transport gravel to New Jersey from their Branford facility. The site will have forklifts and clamshells on site to handle the bulk items the terminal will handle. The material will be transferred from barges to trucks or train for final delivery to customers.

Chapter V

Service Parameters

Two types of container barge service have been investigated for this study, RO/RO and LO/LO. In a RO/RO operation, a container chassis is driven onto the barge by a yard tractor, and the container/chassis are then secured. The barge is then moved to its destination by a tug. When the barge reaches its final destination and is secured to its berth, yard tractors drive onto the barge and transport the container/chassis to the container storage area.

A LO/LO service operation consists of a yard tractor pulling a chassis to the container storage area; a reach stacker then takes a container off a stack of containers and places it on the chassis. The yard tractor brings the container to the area where the barge is being loaded. A crane would then take the container off the chassis and lift it onto the barge where it will be secured. Once the barge has reached its final destination, this process is reversed.

The key difference in implementing a RO/RO service as opposed to a LO/LO service is the cost difference between the two operations. The LO/LO operation requires more initial capital expenditures and more labor to operate the service. A LO/LO operation would require a mobile harbor

crane at \$3 million a unit (new), or \$1.5 million (used), or reach stackers at \$175,000 a unit (used) which move the containers from the barge to the dock. A RO/RO service would not require a crane or the stackers to unload a barge, as the yard tractors would drive onto the barge and pull the container off the barge to the storage area. A LO/LO service also requires the yard tractors to transport the containers from the dock to the storage area.

As the RO/RO service would require fewer pieces of equipment in its operation, it would require fewer workers to load and unload a barge. The International Longshoremen Association (ILA) has a master contract with terminal operators, which requires specific crew sizes for various operations. A LO/LO service could require between 16 and 29 people to operate all the required equipment and provide support staff. Because a crane and reach stacker are not needed in a typical RO/RO operation, fewer workers are needed and, therefore, the operational costs are typically lower.

For a RO/RO service to begin operation, the five terminals in the Port of NY&NJ may require ramps to be installed at the terminals to allow the container to be loaded and unloaded on and off the barge. This could require agreements to be reached with the terminal operators and the PANY&NJ for labor and construction at the terminals. Environmental documents and permits may also be required. The process, from

negotiating the agreements to final construction, could be a multi-year effort.

It has been suggested that a barge be constructed which would have a self-contained ramp system. Such a system would be intended to reduce the need for infrastructure modifications at the Port of NY&NJ. The proposed barge would have a movable ramp system. Current estimates indicate that it could take 30 minutes to relocate the ramp from bay to bay to accommodate the loading and unloading of vehicles.

Bridgeport RO/RO Service

A RO/RO service to the Port of Bridgeport would require the containers to be placed on chassis at the Port of NY&NJ terminals and driven onto the barge by a yard tractor. The yard tractor would leave the container/chassis combination on the barge where the chassis must be secured to the barge.

A single barge can accommodate approximately 80 containers. The barge could be shuttled between various terminals at the Port of NY&NJ to pick up containers. It is anticipated that a barge would operate at 80 percent efficiency. Therefore, the barge service could be transporting approximately 64 containers a trip if the service becomes operational. It

would take approximately seven hours for a loaded barge to make the trip from the Port of NY&NJ terminals to Bridgeport.

In Bridgeport, the barge could dock at one of the two berths presently being used by the port operator, Logistec Connecticut Inc., for their fruit operation. An average of one ship a week currently docks in Bridgeport. Therefore, it is anticipated that there would be ample berth space available for a new container service. After being off-loaded by the yard tractors, the containers would have to be transported to a storage area. A six-acre site that is owned by Logistec is located approximately one-quarter mile from the dock area. The six-acre storage area should be sufficient to accommodate the initial volume of containers forecast for this service. The containers would be stored on site in a wheeled fashion, attached to the chassis, as opposed to taking the container off the chassis and storing them in stacks. Once the barge has been emptied, stored containers earmarked for the return trip can be loaded onto the barge.

The existing warehouse on site could be used to strip overweight containers and stuff other trailers to make a legal load for trucks to transport the goods to the receivers. Presently about 15 percent of the containers coming into the Port of NY&NJ are overweight. Columbia Coastal has indicated that they transport a large number of overweight containers on barges destined for Boston.

Once the barge has been loaded with containers, it would make the return trip to the Port of NY&NJ. The return trip would take seven hours. On each end of the trip it is expected to take approximately four hours to load and unload the barge. If the 14 hours of total transit time is added to the 8 hours of total loading and unloading time, this service could make one round trip in 22 hours. This service could provide a daily round trip of one barge between Bridgeport and the Port of NY&NJ, five days a week.

Bridgeport – LO/LO

For a LO/LO service, containers can be loaded onto the barge in Port of NY&NJ using the existing cranes at the various terminals which currently load/unload container ships and other container barges. The transit time to Bridgeport from the Port of NY&NJ would be seven hours. The service could operate two days per week and carry 250-300 containers a week bi-directional using one tug and one barge.

The barge would use one of the same two berths in Bridgeport that the RO/RO service would use. As the Port of Bridgeport does not have a crane, one would have to be purchased or leased for this operation. The containers would be lifted off the barge and placed on a chassis being pulled by a yard tractor. The containers would then be transported to Logistec's six-acre parcel located one-quarter mile from the terminal. Once

the barge is unloaded, the containers that are being returned to the Port of NY&NJ would be transported to the terminal and loaded onto the barge.

Overweight permits would be needed to allow trucks to move overweight containers to the existing warehouse to be stripped. The fruit warehouses could also be used for this operation. A scale facility and gate facility would be needed for this operation to insure that the loads leaving Bridgeport by truck satisfy weight regulations. The storage area for the containers at the present time is not completely paved, and the paving of the remainder of the storage area would be required. A LO/LO container barge service could be in operation within a year once the operational agreements have been reached between the Port of NY&NJ and Connecticut, along with purchasing the equipment to operate the service.

New Haven – RO/RO Service

The forecast for this service to begin would be 65 containers per sailing, using two barges and one tug. The transit time between the Port of NY&NJ and the Port of NH is 11 hours. A round trip would require 22 hours, plus an additional eight hours at either port to unload and load a barge. This service would sail two or three times a week.

A tentative schedule for the service has been identified. Two barges would be loaded on Monday, one in the Port of NY&NJ and one in

New Haven, with the tug positioned in the Port of NY&NJ. The tug with the barge would leave the Port of NY&NJ at Noon on Monday, arrive in New Haven at 11 p.m. and be docked by midnight. The tug would then pick up a pre-positioned loaded barge in New Haven and transport it to the Port of NY&NJ, arriving at 11 a.m. on Tuesday, docked by Noon and unloaded by 5 p.m.

The barge left in New Haven would also be unloaded on Tuesday. On Wednesday one barge would be loaded between 8 a.m. and Noon in the Port of NY&NJ and another in New Haven. The barge in the Port of NY&NJ would leave at Noon and arrive in New Haven at 11 p.m., docking by Midnight. The tug would then take the loaded barge that was waiting from New Haven and sail to the Port of NY&NJ, arriving at 11 a.m. on Thursday and unloaded. On Friday morning one barge would be loaded between 8 a.m. and Noon in the Port of NY&NJ, and another would be unloaded in New Haven. The barge in the Port of NY&NJ would leave at Noon and arrive in New Haven at 11 p.m., docking by Midnight. The tug would then take the pre-positioned barge from New Haven to the Port of NY&NJ, arriving and unloading it by 5 p.m. on Saturday.

The site in New Haven where the barges would dock and operate from would be the Logistec's terminal. This site has one existing finger pier and one quay where a barge could dock. The finger pier has a pipeline on the

north, which could prohibit a barge operation from using that side. A barge could use the south side of the pier for the container operation. The width of the pier, which is 60 feet, would present operational difficulties if the yard tractors have to turn the containers around on the pier.

The quay to the north of the pier would be ideal for a container barge to use. The yard tractors can drive onto the barge, hook up to a container, and drive it off the barge onto the terminal property in a circular one-way traffic pattern, which could increase the efficiency of the operation.

The terminal includes four warehouses that can be used for stripping overweight containers and stuffing trailers for legal loads that can be transported on the roadway network. The legal containers from the barge and the stuffed trailers can leave the terminal and travel across Waterfront Street to a storage area that is operated by Logistec.

Because the containers would have to be moved over the public roadway network, the trailers and the chassis would have to be street legal. This will increase the cost of the equipment, or a waiver of the weight limitations would have to be granted. A scale would also be needed on the terminal property for the containers to be weighted before they travel out onto the public roadway network to the storage area. The storage area for the containers would have to be fenced, lighted, and secure.

As in Bridgeport, the five terminals in Port of NY&NJ may require that modifications be made to the quays or that a barge with ramps be utilized for a RO/RO service to operate. The multi-year process required for the construction of the ramps would not allow implementation of a project in the near term.

New Haven LO/LO

Similar to the RO/RO service, the LO/LO service to New Haven would take 11 hours to make the trip from NY&NJ to New Haven. It could operate two days per week and carry 250 to 300 containers per week bi-directional. It would need one barge and one tug on the day of sailing to operate this service. The Port of NH currently has cranes that could be used for this type of service.

New Haven has two terminal operators which could potentially operate a LO/LO service. Logistec has approximately 180 ships berthing at their terminal per year. This volume of traffic into their terminal would mean that a container barge would not have a guaranteed berth. Without a guaranteed berth, the final delivery of the containers to a receiver could not be guaranteed for a certain date, which would be a major obstacle for this service. If such a service were to be initiated, the process to construct a new berth should be started.

Gateway Towing is the other terminal operator who could operate a container service in New Haven. Their operation uses non-union labor, which means that the International Longshoremen's Association (ILA) in the Port of NY&NJ would not likely handle containers due non ILA labor in New Haven at Gateway Terminals.

For a LO/LO service to become operational in New Haven, a new berth or terminal would likely have to be constructed. Two possible new berths have been identified at Logistec terminal, which cost \$2.3 to \$6 million to construct. The process to build these berths could include environmental documents and permits, design and site preparation before the construction process.

A new terminal could be constructed at the Williams Tank Farm or at the North Yards (Figure A-1). Both of these sites are considered to be at high risk for the presence of contaminants. The cost and time that would be required to decontaminate these sites because of past uses could be substantial. In order to have direct docking facilities at the North Yards, the channel leading to it would have to be dredged.

New Haven – New London LO/LO

The United States Merchant Marine Academy (USMMA) has suggested a proposal to move containers to the Port of New London from the Port of NY&NJ. The USMMA believes that Bridgeport is too close to the Port of NY&NJ. Because of this, the USMMA feels there would not be sufficient time advantage for the movement of containers by barge to Bridgeport, especially since the containers would be put back on the congested I-95 in the Southwest Corridor to be transported by truck to their final destination.

The USMMA has proposed to be the controlling authority for a New London operation. They would lease the barges and tugs from a third party and also control the trucking aspects of the service in order to provide a seamless intermodal service.

The USMMA proposal for a feeder barge service would require a total of seven barges, five of which would be positioned in Port Elizabeth and two in New London. Three barges would be loaded in Port Elizabeth and transported by tug to New London. One barge would be dropped in New Haven, and the remaining two would be transported to New London. The two barges would be left in New London for unloading, and the tug would return to Port Elizabeth with the two barges that were previously

emptied at New London. On the way back to Port Elizabeth they would pick up the barge that is in New Haven.

The number of containers moved in and out of Connecticut at the start of the service is expected to be 100 to 150 per week. As the service matures, it is projected to grow to approximately 500 containers per week, the equipment used in the operation would be leased instead of chartered and personnel from the USMMA and New York State Merchant Marine Academy would staff the vessels. This would help reduce the cost of operating the service.

This service could not be put into operation until a new berth or terminal is constructed in New Haven and the construction activities presented in the next section for New London are completed.

New London

Improvements are planned for the west side of the State Pier in New London and they will include demolition of the existing 50-foot-wide pier apron and retaining wall, along with the construction of their replacement. This project will take 540 days to be completed.

The construction process will require a work area in the water around the west side of the pier that would prohibit a container barge operation the

use of this restricted water area. At the head of the pier on the landside, the contractor will be given a 0.6-acre staging area that is presently being used for lumber storage and loading lumber trucks. The State Pier Access Road is to be used as the contractor site-access route. This road is presently being used as a queuing area for trucks waiting to pick up a load of lumber. Therefore, the lumber storage and loading area, along with the truck queuing area, will have to be relocated onto another portion of the State Pier property.

The contractor is also being allowed to use 1.7-acres of property within the State Pier property complex to use as a lay down area. This property is currently vacant land, which is planned to be used for a possible new warehouse. The remainder of the State Pier and State Pier property, except for the parking area near the Old Navy Club, is being used to store lumber and copper and for a lumber distribution operation. The previously mentioned unused parking area may be used by the port operator during the construction of the west side of the pier to compensate for the loss of storage space and the truck queuing area.

The existing warehouse to the north of the World Cargo Building (WCB) is going to be torn down and replaced with a new 47,300 square foot warehouse. The WCB will also have various upgrades completed during the

construction process, along with the State Pier Access Road and the railroad tracks leading to the State Pier.

The contractor's construction area will include the WCB, the area between the WCB and the State Pier Access Road, and the area to the north of the WCB between the State Pier Access Road and the former Congdon Street where the new warehouse is to be built. The construction staging area is to be north of SR 437. This activity will result in the loss of lumber storage areas and the operational areas where lumber transport trucks are loaded and will have to be transferred to other State Pier property. With the construction activities taking place on the State Pier, warehouses, roads and railroad tracks, along with the associated water use requirements and landside staging and storage uses, there will not be sufficient space available during the next two to three years to operate a new container barge feeder service on the existing State Pier property. At the present time the state is investigating the possibility of purchasing the Canadian National Pier adjacent to the State Pier. The pier (six acres) and associated upland (three acres) is approximately nine acres. The upland area contains a fuel storage tank, which would have to be removed, and would require environmental remediation. This would have to be accomplished before this area could be used for container storage or drayage.

The Canadian National Pier, in its present condition, is not suitable for long-term use for a container service. A thin overlay of pavement was placed for OpSail 2000, which is not suitable to handle the heavy loads of containers. The retaining walls of the pier are in poor condition and would require a 20-to-25-foot setback for the containers to be placed on the pier, otherwise, it could cause the retaining wall to collapse. A container barge could not currently dock at the Canadian National Pier because the containers could not be transferred from the barge to the pier due to the condition of the retaining walls.

Chapter VI

Connecticut Equipment Requirements

A container barge service to a Connecticut port will require equipment and facilities to operate the service efficiently. The equipment and facility needs identified for the service are based on information collected through interviews with port and barge operators. This report does not quantify the equipment that would be needed in the Port of NY&NJ for the container barge service. The following is what ConnDOT anticipates would be needed to implement various container barge operations. This inventory may not reflect the equipment needs the regions have identified in their capital costs. The specific equipment to initiate a new service may vary depending upon the type and extent of service and port location.

Bridgeport RO/RO

- 1 Tug
- 1 Barge
- 6 Yard Tractors
- 2 Ramps
- 1 Warehouse
- Security Fencing/Lighting
- 1 Scale
- 1 Gate Facility/Office
- 1 Maintenance Facility and Maintenance Tools
- 10 Container Chassis
- 2 Reach Stackers
- 1 Forklift

Bridgeport LO/LO

1 Tug
1 Barge
6 Yard Tractors
2 Adjustable Spreaders
2 Harbor Cranes
4 Reach Stackers
100 Chassis
1 Warehouse
Security Fencing/Lighting
1 Scale
1 Gate Facility/Office
1 Maintenance Facility and Maintenance Tools
Storage Rack for Chassis

New Haven RO/RO

1 Tug
2 Barges
6 Yard Tractors
1 Ramp
1 Warehouse
Security Fencing/Lighting
1 Scale
1 Gate Facility/Office
1 Maintenance Facility and Maintenance Tools
Storage Rack for Chassis
10 Container Chassis
2 Reach Stackers
1 Forklift

New Haven LO/LO

1 Tug
2 Barges
6 Yard Tractors
2 Adjustable Spreaders
2 Harbor Cranes
4 Reach Stackers
100 Chassis
1 Warehouse
Security Fencing/Lighting
1 Scale
1 Gate Facility/Office
1 Maintenance Facility and Maintenance Tools
Storage Rack for Chassis

New Haven – New London LO/LO

- 1 Tug**
- 1 Tug-Assist in New York**
- 6 Barges**
- 6 Yard Tractors in New Haven**
- 3 Yard Tractors in New London**
- 2 Adjustable Spreaders in New Haven**
- 1 Adjustable Spreader in New London**
- 4 Reach Stackers in New Haven**
- 2 Reach Stackers in New London**
- 100 Chassis in New Haven**
- 50 Chassis in New London**
- 1 Warehouse in New Haven**
- 1 Warehouse in New London**
- Security Fencing/Lighting in New Haven**
- Security Fencing/Lighting in New London**
- 1 Scale in New Haven**
- 1 Scale in New London**
- 1 Gate Facility/Office in New Haven**
- 1 Gate Facility/Office in New London**
- Storage Rack for Chassis in New Haven**
- Storage Rack for Chassis in New London**
- 1 Maintenance Facility and Maintenance Tools in New Haven**
- 1 Maintenance Facility and Maintenance Tools in New London**

New London RO/RO

- 1 Tug**
- 3 Barges**
- 6 Yard Tractors**
- 1 Ramp**
- 1 Warehouse**
- Security Fencing/Lighting**
- 1 Scale**
- 1 Gate Facility**
- 1 Maintenance Facility and Maintenance Tools**
- Storage Rack for Chassis**
- 10 Container Chassis**
- 2 Reach Stackers**
- 1 Forklift**

New London LO/LO

- 1 Tug**
- 3 Barges**
- 2 Adjustable Spreaders**
- 6 Yard Tractors**
- 2 Harbor Cranes**
- 4 Reach Stackers**
- 100 Chassis**
- Storage Rack for Chassis**
- 1 Warehouse**
- Security Fencing/Lighting**
- 1 Scale**
- 1 Gate Facility**
- 1 Maintenance Facility and Maintenance Tools**

Chapter VII

Operating and Capital Costs
(all total operating costs are bi-directional)
New Haven Port Operating Costs
New Haven Port RO/RO Operating Costs¹
(exclusive of land investment)
rates per 40' loaded containers (less than 19.9 tons)

Stevedoring	\$	250.00
- Off-loading container to chassis, chassis to barge		
- Storage and container to barge		
ILA Container Royalty & NYSA Unit Fee	\$	140.00
Barge	\$	110.00
Barge (fit out-first year cost only)	\$	30.00
Tug	\$	140.00
Stevedoring (New Haven)	\$	250.00
Labor (\$75), Equipment (\$25) and Gate Charge (\$25)		
Drayage to Storage Yard and Storage	\$	100.00
Over-the-Road Local Delivery (based on r/t)	\$	250.00
Total	\$	<u>1,270.00</u>

New Haven Start-Up LO/LO Operating Cost Parameters
(exclusive of land investment)
rates per 40' loaded containers (less than 19.9 tons)

Stevedoring	\$	300.00
Off-loading container to chassis, chassis to barge		
Storage and container to barge		
ILA Container Royalty & NYSA Unit Fee	\$	140.00
Barge	\$	110.00
Barge (fit out-first year cost only)	\$	30.00
Tug	\$	140.00
Stevedoring (New Haven)	\$	300.00
Labor (\$90), Equipment (\$35) and Gate Charge (\$25)		
Drayage to Storage Yard and Storage	\$	100.00
Over-the-Road Local Delivery (based on r/t)	\$	250.00
Total	\$	<u>1,370.00</u>

The cost of trucking a container from the Port of NY&NJ to the Hartford market area is \$1,360.

¹ Costs prepared by South Central Regional Council of Governments report on barge service to New Haven. Actual costs may vary once specific operating characteristics are determined.

Bridgeport Port Operating Costs
Bridgeport RO/RO Operating Costs Per 40' Container²
(exclusive of land investment)

Tug/Barge & Miscellaneous Costs	\$	198.00
Barge Loading and Discharge	\$	250.00
Port	\$	90.00
Assessments & Royalties	\$	85.00
Truck	\$	<u>250.00</u>
Total	\$	873.00

Bridgeport LO/LO Operating Costs Per 40' Container
(exclusive of land investment)

Tug/Barge & Miscellaneous Costs	\$	198.00
Barge Loading and Discharge	\$	480.00
Port	\$	90.00
Assessments & Royalties	\$	85.00
Truck	\$	<u>250.00</u>
Total	\$	1,103.00

The truck costs from the Port of NY&NJ to Hartford are \$935 per container.

² Costs based on Economic Viability of a Waterborne Barge Service for Bridgeport Harbor prepared by the Greater Bridgeport Regional Planning Agency. Actual costs may vary once specific operating characteristics are determined.

New London Port Operating Costs³
New London RO/RO Costs
(exclusive of land investment and harbor maintenance tax)

Land Transportation (including drayage)	\$	234.00
Assessments and Royalties	\$	85.00
Port Terminal	\$	120.00
Barge Loading and Discharging	\$	235.00
Tug and Barge	\$	<u>255.00</u>
Total	\$	929.00

New London LO/LO Operating Costs
(exclusive of land investment and harbor maintenance tax)

Land Transportation (including drayage)	\$	234.00
Assessments and Royalties	\$	85.00
Port Terminal	\$	160.00
Barge Loading and Discharging	\$	413.00
Tug and Barge	\$	<u>287.00</u>
Total	\$	1,179.00

Truck cost from the Port of NY&NJ to the New London market area are \$1.087 per container.

³ Costs based on the Port of New London Container Barge Study prepared by the Greater Bridgeport Regional Planning Agency. Actual costs may vary once specific operating characteristics are determined.

Bridgeport, New Haven, New London Capital Costs⁴

Bridgeport Start-Up RO/RO Capital Costs

	<u>High Estimate</u>	<u>Low Estimate</u>
<u>DOCK</u>		
Bulkhead – 280 ft. @ 30 ft. Depth	\$ 1,400,000.00	\$ 560,000.00
Encapsulate Wale w/Concrete	\$ 112,000.00	
Fendering – 280 ft. High Est. Bulkhead	\$ 17,360.00	\$ 10,080.00
280 ft. Low Est. Bulkhead	\$ 27,200.00	\$ 25,600.00
Bollard - 4 @ 100 or 200 ton	\$ 25,136.00	\$ 21,308.00
Paving - 17 acres	\$ 2,266,814.00	\$ 863,940.00
Lights - 17 acres w/2500 ft. of feed	\$ 275,000.00	\$ 275,000.00
Fence - 4,500 ft. @ 8 ft. w/Razor Wire	\$ 84,375.00	\$ 74,500.00
Parking Barrier Powered Barrier Gate	\$ 4,000.00	\$ 3,500.00
Fuel & Waste		
Oil Tanks 4000 gal.	\$ 26,000.00	\$ 24,000.00
250 gal. low est. is for 550 gal. tank	\$ 5,500.00	\$ 4,500.00
Sewer Pipe Ext. 500 ft. 36" pipe, bulkhead and fill	\$ 1,257,878.00	\$ 667,198.00
Subtotal	\$ 5,501,263.00	\$ 2,529,626.00
 <u>BUILDINGS</u>		
Office Space 1056 sq. ft. w/1/2 bath, electric, heat & air conditioning	\$ 43,000.00	\$ 35,975.00
Office Equipment Supplies for 4 person Office and guard shack	\$ 28,404.12	\$ 15,793.75

⁴ Costs are based on regional reports and anticipates purchase of some new equipment. Actual costs may vary once specific operating characteristics are determined.

Maintenance Bldg. 30 x 60 w/slab, erected	\$ 82,600.00	\$ 75,600.00
Maintenance – Tools Complete set of maintenance equip.	\$ 26,223.25	\$ 26,223.25
Guard Shack – 120 sq. ft. w/1/2 bath, elec. Heat and air conditioning	\$ 16,000.00	\$ 10,000.00
Subtotal	\$ 196,227.00	\$ 163,592.00
<u>SAFETY</u>		
Safety Items	\$ 7,966.00	\$ 7,996.20
Subtotal	\$ 7,966.00	\$ 7,966.20
<u>CONTAINER HANDLING EQUIPMENT</u>		
Yard Tractors – 7 Ottawa Commando 50 w/32" lift	\$ 364,000.00	\$ 364,000.00
Container Handlers-1 Hyster H880 for loaded containers	\$ 340,000.00	\$ 340,000.00
-1 Hyster H360 for empty containers	\$ 150,000.00	\$ 150,000.00
Container Chassis - 10 - 40'	\$ 100,000.00	\$ 82,000.00
Ramp – Special Design for Barge, 2 @ 112,000.00	\$ 224,000.00	\$ 224,000.00
Barge – Purpose Built 1 @ \$8,200,000.00	\$ 8,200,000.00	\$ 8,200,000.00
Subtotal	\$ 9,378,000.00	\$ 9,360,000.00
TOTAL	<u>\$15,083,456.57</u>	<u>\$12,061,184.20</u>

New Haven Start-Up LO/LO Capital Costs

Paving East Shore Parkway	\$ 1,000,000.00
Mobile Harbor Crane (used)	\$ 1,500,000.00
2 Reach Stackers	\$ 700,000.00
4 Yard Tractors	\$ 212,000.00
100 Trailer Chassis	<u>\$ 1,200,000.00</u>
TOTAL	<u>\$ 4,612,000.00</u>

New London RO/RO Start-Up One Trip Per Week Capital Costs

	<u>High Estimate</u>	<u>Low Estimate</u>
Bulkhead – (1000 feet)	\$ 5,000,000.00	\$ 2,400,000.00
Pier and Upland Improvements Fendering, bollards, paving, lights, fence, etc.	\$ 3,494,616.00	\$ 3,494,616.00
Office Equipment and Maintenance Tools	\$ 64,404.00	\$ 64,404.00
Safety Items	\$ 7,966.00	\$ 7,966.00
Container Handling Equipment	\$ 458,000.00	\$ 458,000.00
Barge (Barge Used from Other Service)	\$ 0	\$ 0
TOTAL	<u>\$ 9,024,986.00</u>	<u>\$ 6,424,986.00</u>

New London RO/RO Start-Up One Trip Per Day Capital Costs

	<u>High Estimate</u>	<u>Low Estimate</u>
Bulkhead – (1000 feet)	\$ 5,000,000.00	\$ 2,400,000.00
Pier and Upland Improvements Fendering, bollards, paving, lights, fence, etc.	\$ 3,494,616.00	\$ 3,494,616.00
Office Equipment and Maintenance Tools	\$ 64,404.00	\$ 64,404.00
Safety Items	\$ 7,966.00	\$ 7,966.00
Container Handling Equipment	\$ 1,178,000.00	\$ 1,178,000.00
Barge	\$ 8,200,000.00	\$ 8,200,000.00
TOTAL	<u>\$17,944,986.00</u>	<u>\$15,344,986.00</u>

As can be seen from this information, the capital costs for a new container feeder barge service would vary from \$4,612,000 to \$17,944,986, depending upon the equipment and infrastructure requirements. Operating costs would also vary from \$873 to \$1,370 per container. The costs, which have been developed by the regional studies, vary, primarily due to differences in anticipated operational characteristics and costs and capital requirements. The actual operating and capital costs would be determined based upon the development of a detailed operations plan for a new service.

Funding for a new service at Bridgeport could be made available through the Bridgeport Port Authority. The Port of NH does not have an established Port Authority. Funding for a service at the Port of New Haven could be made available through the city of New Haven, or through a Port Authority, which would be established.

Chapter VIII

Preliminary Review of Potential Operational, Social and Environmental Concerns

Port of New York/New Jersey

A RO/RO container barge service could require modifications to the terminals at the Port of NY&NJ. This could require a fixed-ramp system, which serves as a bridge between the barge and the terminal. The ramp system would have to be constructed at the various terminals where a barge would dock. If a fixed-ramp system is not constructed, a self-contained ramp system on a barge would be required. The design of this type of a system for loading and unloading vehicles and containers from a barge would probably have to be agreed upon by the PANY&NJ and the ILA stevedores.

Agreements to construct the fixed ramps would have to be reached between the Port Authority and the Port of NY&NJ terminal operators before the process to modify the terminals could begin. The modifications to the terminals could entail work that could require environmental documents and permits, design and remediation prior to construction of the ramp system. This could be a multi-year process. Constructing a barge with a self-contained ramp system would reduce the extent of infrastructure modifications at the Port of NY&NJ.

Port of Bridgeport

For a container barge feeder service to begin operating in the near term, the existing port facilities operated by Logistec would have to be used. The barge could use one of the two berths currently available. However, to transport the containers from the dock area to the warehouse facility and staging/storage area that is available for a start-up operation, they would have to be transported by truck over Seaview Avenue for a short distance. The movement of the containers could affect the noise climate and air emissions in the adjacent neighborhood.

To operate a container service for the longer term at the Port of Bridgeport, it would require the construction of berth facilities, warehousing and maintenance facilities, gate and scale facilities, along with paving, fencing, and lighting on the Cartec site. The berth facilities would be part of a 3-acre site adjacent to the harbor, while the warehouse and other facilities would be part of a 14-acre parcel located on the furthest side of the Cartec site. An access road would have to be built between the parcels, which would require agreements to be reached with two other users of the property.

To create the infrastructure required for the long-term operation will require further planning, environmental documents, operational agreements with adjacent landholders, permits, remediation, dredging, design, and construction. The reconstruction of the quay at the Cartec site would require

environmental documents and permits. The construction of the warehouse and gate facilities could require an environmental clean up, and the movement of the containers through the site could affect the noise climate and air emissions in the adjacent neighborhood.

The Port of New Haven

The Port of NH at the present time does not have a berth available to accommodate a container barge operation on demand. Logistec's present volume of ship traffic could not guarantee that a barge could use one of its existing berths in a timely manner to get the containers to their final destination on schedule. Gateway Terminals is a non-union operation and, therefore, the ILA in the Port of NY&NJ would probably not load a barge destined to this facility.

Construction of a berth at Logistec's terminal would require an operational agreement with Logistec, permits, design, and construction. This is a multi-year process that could not be circumvented. Gateway Terminal would have to become a union shop before the ILA would load a barge going to their facility.

The construction of a new terminal in New Haven would require using the Williams Tank Farm property or the North Yards property. Because of past uses, these sites are expected to be at high risk for encountering

contaminated or hazardous materials. It would require a substantial amount of time and resources to prepare the site prior to construction of a new terminal. When this extensive amount of time is added to the time frame required to secure the necessary environmental documents and permits, finalize design, and complete construction, the Port of NH is not considered to be a candidate for near-term implementation of a container feeder port project.

Port of New London

The State Pier and the Canadian National Pier in New London would have various impacts associated with container barge feeder service operations. These include environmental, socioeconomic, and the physical and equipment needs to support the service.

The Canadian National Pier at the present time is structurally deficient in that the stone retaining walls around the pier are in poor (non-operational) to fair condition. This deficient condition means that loads greater than 500 pounds per square foot cannot be within 20 feet of the edge of the pier and within 25 feet where the walls have collapsed. This situation would have to be corrected to allow for a container barge operation to use this pier in an efficient manner. Sheet piles would have to be placed around the pier and back-filled.

This type of construction would require state and federal environmental documentation and permits from the appropriate environmental agencies. This is a multi-year process that would have to be initiated soon if the Canadian National Pier is to be fully utilized for a container feeder barge service.

The Canadian National Pier also contains a depression (Bird Bath) that would need to be corrected. An analysis of the sub-base of this depression should be conducted to determine if the sub-base is in suitable condition or if it needs to be replaced with suitable material to support pavement and future loads on the pavement.

The Canadian National Pier property landward of the pier has an old fuel tank which is currently out of service. Removing this tank would provide additional storage space for containers or other goods the port processes. This activity would require an environmental analysis and remediation process (which may include the parking area) after the tank has been physically removed.

A barge service operating to New London would include overweight containers, which would not be allowed to be transported by trucks over the state's roadway system. An overweight container would need to have its contents removed and loaded into other containers to comply with regulated

weight allowances. This process would require dedicated space in the existing warehouse on the state pier property or in one of the two planned warehouses that have been proposed for the state pier area.

Moving the containers from the dock area to the warehouse or a staging/storage area would require yard tractors or other vehicles capable of moving the containers within port property. The movement of the containers within the port property could have an adverse effect on the present pavement condition depending on pavement depth and the weight of the containers. If the containers were staged/stored in an area that has been constructed to accommodate automobile parking, the area would have to be reconstructed to accommodate the additional loads placed on the pavement.

A new gate facility may be needed if the total of the additional truck traffic from a new container barge service, along with the truck traffic of the existing port activities, exceeds 75 trucks a day. The increased truck traffic from a new barge service and associated delivery trucks traveling to and from I-95 and I-395 could affect the noise and air emissions in the surrounding neighborhoods.

Chapter IX

Effect on Roadway Congestion

The barge service is projected to transport 40 to 80 containers a day initially between the Port of NY&NJ and Connecticut. This would result in the same number of truck trips diverted from the I-95 corridor. Although beneficial, this would not have a noticeable effect on the traffic volumes and operations on I-95, particularly during the commuter travel period. The traffic congestion levels of I-95 would remain the same and, therefore, little traffic congestion relief or measurable air-quality improvements could be anticipated with a new barge service.

At the present time, I-95 is operating at a level of service F during the peak period. According to the Federal Highway Administration "Highway Capacity Manual 1997" this would equate to at least 2,400 vehicles per hour per lane (one-way). Assuming that I-95 averages three lanes between the New York state line and New Haven, this means that there are at least 7,200 vehicles on I-95 per hour during the commuter travel time and peak direction. Approximately 10% of these vehicles (720 per hour) are trucks.

Chapter X

Conclusions

This report presents the information collected by ConnDOT, the Greater Bridgeport Regional Planning Agency, and the South Central Regional Council of Governments regarding the opportunity for initiating a container barge feeder service between the Port of NY&NJ and a Connecticut port(s). The findings of the investigations conducted for this study indicate that a new container barge feeder may be feasible. Implementation of such a service in Connecticut, either in the near or long-term, may be dependent upon the type of operation pursued (RO/RO or LO/LO) and the associated infrastructure requirements. The interest and capabilities of the Port of NY&NJ would be a primary consideration in pursuing a service for Connecticut. A RO/RO barge operation to any Connecticut port could require operational or infrastructure modifications in the Port of NY&NJ to provide a ramp system that would accommodate such a service. Constructing a barge with a self-contained ramp system could reduce the extent of infrastructure modifications required for a RO/RO service at the Port of NY&NJ.

A new barge service is expected to carry up to 40 to 80 containers daily (bi-directional) between Connecticut and the Port of NY&NJ. These containers are currently being transported by truck along the I-95 corridor through southwest Connecticut. Diverting these containers from truck to barge would

contribute toward reducing the number of trucks traveling I-95. The effect upon roadway congestion and operations along this highly traveled corridor would be limited.

As can be seen from this information, the capital costs for a new container feeder barge service would vary from \$4,612,000 to \$17,944,986, depending upon the equipment and infrastructure requirements. Operating costs would also vary from \$873 to \$1,370 per container. The costs, which have been developed by the regional studies, vary, primarily due to differences in anticipated operational characteristics and costs and capital requirements. The actual operating and capital costs would be determined based upon the development of a detailed operational plan for a new service.

A detailed operations plan should be developed for implementing a “start-up” barge feeder service between the Port of NY&NJ and either the Port of Bridgeport or the Port of NH. Such a plan and “start-up” service would demonstrate the actual market viability for a long-term investment.

It should be noted that ConnDOT must operate within the financial capacity of the Special Transportation Fund. ConnDOT’s capital and operating budgets are fully programmed and do not include the financial resources needed to initiate a new container barge feeder service. Additional funding sources will be required to pursue such an effort.

Some of the specific requirements that would need to be addressed in initiating a new container barge feeder service for each of the Connecticut ports considered in this investigation follow.

Bridgeport

In Bridgeport, a limited RO/RO or LO/LO service could be initiated with a capital investment of approximately \$12 to \$15 million. Without building a new barge, it could be initiated at an investment of \$3.8 to \$6.8 million. The operating costs for this service are estimated to be approximately \$900 - \$1100 per container, roundtrip, including final trucking delivery costs to the Hartford/Springfield market. The cost of trucking a container from the Port of NY&NJ to the Hartford/Springfield market is approximately \$935 per container.

In Bridgeport, Logistec Connecticut, Inc. can provide docking, a warehouse for stripping and stuffing, and limited area (six-acre) for storage and staging. It is anticipated that a LO/LO container barge service in Bridgeport could transport approximately 150 containers each trip, twice a week. The single greatest impediment to beginning service in Bridgeport would be the limited amount of land available to provide the storage requirements that a container service need to support the operation.

An investigation conducted for the Greater Bridgeport Regional Planning Agency suggests that a RO/RO service could operate at the Port of Bridgeport five days a week. To accomplish this, the previously mentioned infrastructure or equipment requirements for the Port of NY&NJ would need to be addressed. These requirements would have to be implemented before a RO/RO service could begin. A LO/LO type of barge operation appears to be

the most viable to implement at Bridgeport harbor in the near term. This is due to a greater opportunity to use existing or available infrastructure and equipment.

New Haven

The Port of NH could support a RO/RO or LO/LO container feeder barge service. The New Haven Study has recommended beginning service with a LO/LO type of operation. As previously identified, infrastructure improvements may have to be made for the Port of NY&NJ facilities or a specially built barge would have to be certified and constructed in order for a RO/RO service to begin. The forecast for a LO/LO service would be approximately 100 containers per sailing. This service could operate three round trips a week.

Environmental, design, and construction activities would be required in New Haven. The area identified as the North Yards could most efficiently accommodate a barge berthing facility, storage for containers and a facility for stripping and re-packing containers. However, since the site is located a distance from the port area, docking facilities would need to be constructed; and the channel leading to the site would need to be dredged. Development of this site could cost in excess of \$9 million, not including dredging and environmental remediation. If the development of the waterside access and docking facilities adjacent to the North Yards is not undertaken, all the containers from a barge, excluding the containers requiring stripping and re-stuffing, would have to leave the existing terminal area and travel across Waterfront Street to a storage area. Once the service has been initiated, a new berth would have to be constructed at the existing Logistec terminal area to

avoid conflict with the existing shipping business. The construction of a new berth is estimated to cost between \$2 and \$3 million. Because the containers would have to be transported over the public road network, the yard tractors and the chassis would need to be licensed to allow them to operate on the city streets.

The start-up capital costs for the Port of New Haven would be \$4,612,000. The operating cost for a LO/LO service is estimated to be approximately \$1,370 per container, roundtrip, including final trucking delivery costs to the Hartford/Springfield market. Trucking costs from the Port of NY&NJ to the Hartford/Springfield market area are reported to be competitive at approximately \$1,350 per container.

New London

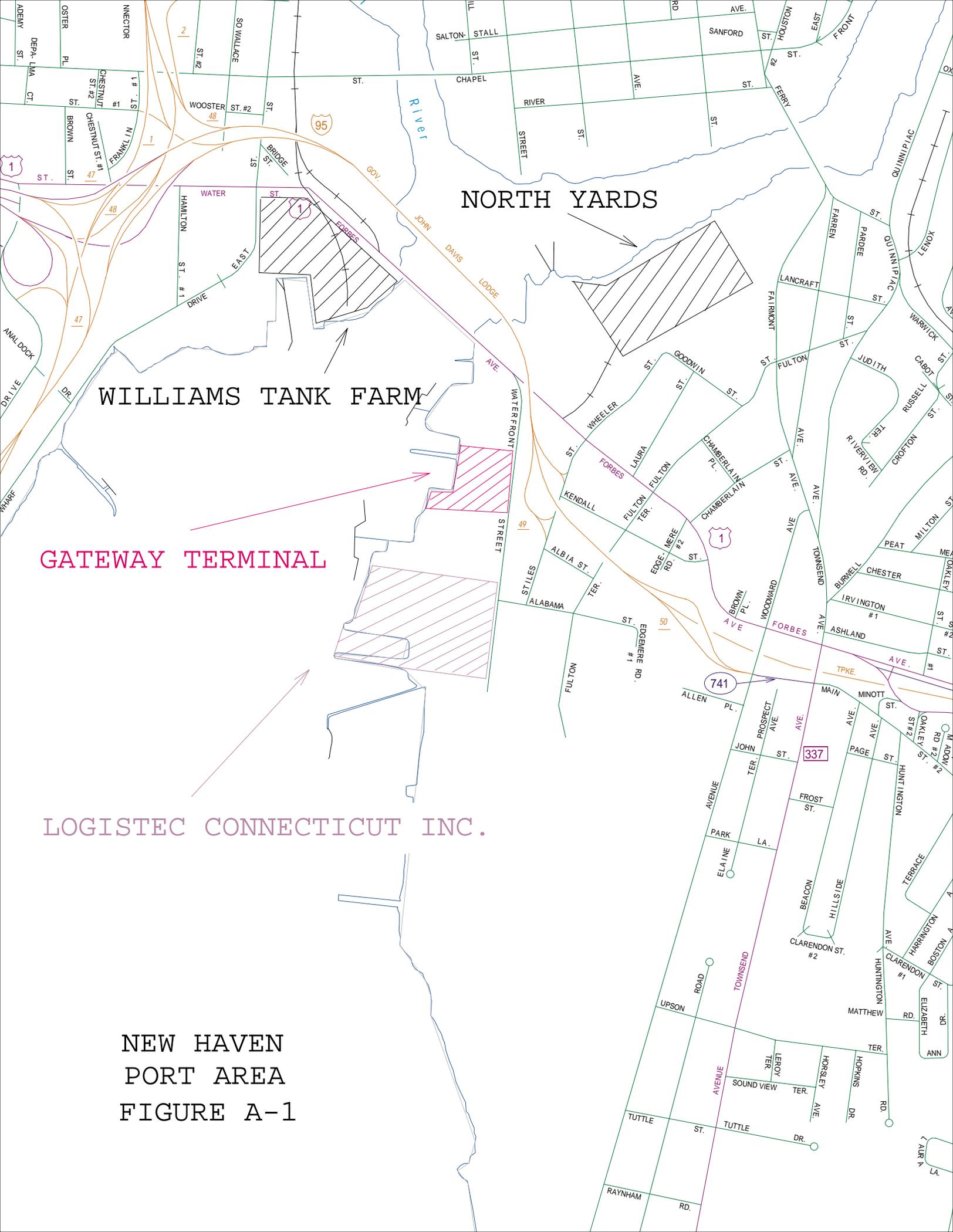
New London does not have sufficient land available to provide the storage area required for a container feeder barge service. The warehouse adjacent to the port area that could accommodate stripping overweight containers and re-packing the containers is currently used to capacity to store lumber. New London currently has programmed the reconstruction of the west side of the pier. Also, a new warehouse is planned to be constructed next to the existing World Cargo Building. With this programmed construction, it is highly unlikely that a container feeder barge service could be initiated at this location within the next three years. Additionally, the New London Port market area that would be attracting containers would have to compete with the Rhode Island Davisville Port. The PANY&NJ is in the process of discussing the introduction of a container barge feeder service in Rhode Island. The Davisville Port has considerably more capacity and serves a much larger market area than New London. Economics associated with a large container service in the Davisville Port indicate that Davisville would likely attract most of the containers that are destined for the New London market area. The cost of a LO/LO container barge service would put the Port of New London at an economic disadvantage compared to trucking, even if the land existed for this type of service.

During the course of the study, the minimum amount of land that would support a container feeder barge service has been identified as being five

acres. If the state should acquire five or more acres of additional land in New London and make it available for a container barge feeder service after the reconstruction of the pier, the viability of a container barge feeder service could be considered at that time.

APPENDIX A

Terminal Locations



NORTH YARDS

WILLIAMS TANK FARM

GATEWAY TERMINAL

LOGISTEC CONNECTICUT INC.

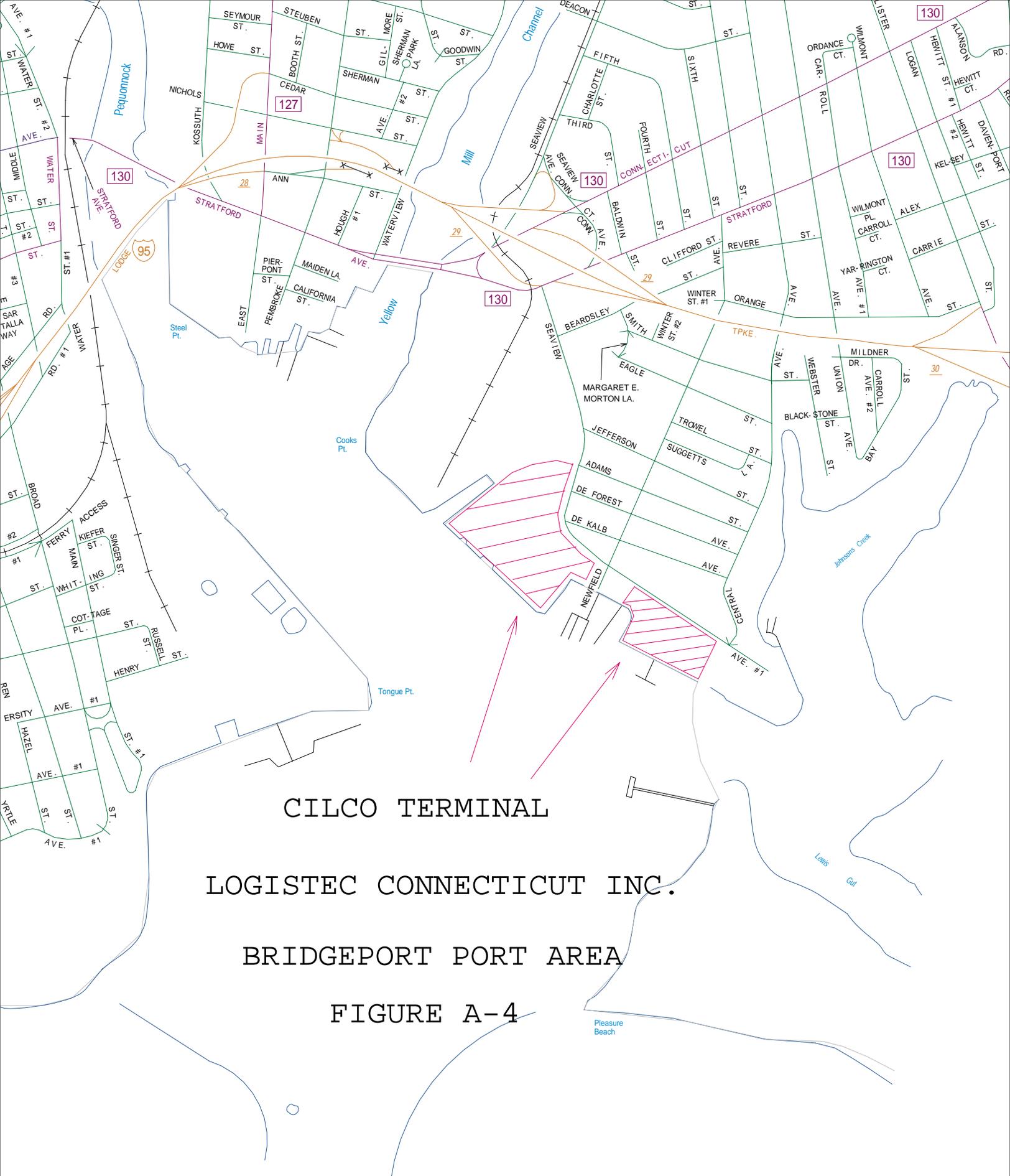
NEW HAVEN
PORT AREA
FIGURE A-1



NORWICH
 BUCHANAN MARINE TERMINAL
 FIGURE A-2



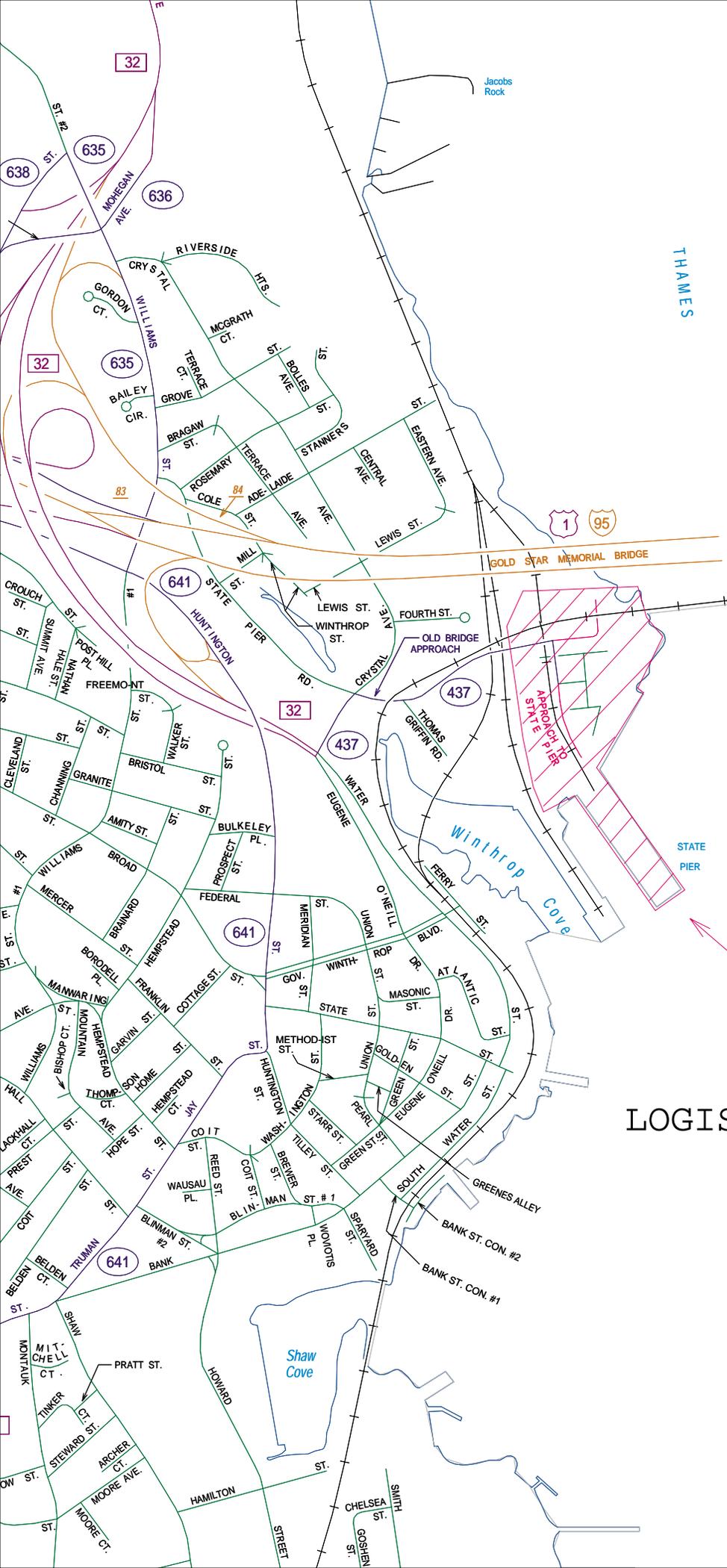
BUCHANAN MARINE
BRIDGEPORT TERMINAL
BLACK ROCK HARBOR AREA
FIGURE A-3



CILCO TERMINAL
LOGISTEC CONNECTICUT INC.
BRIDGEPORT PORT AREA

FIGURE A-4

LONG ISLAND SOUND



STATE PIER
 LOGISTEC CONNECTICUT INC.

NEW LONDON
 PORT AREA
 FIGURE A-5

APPENDIX B

Barge Operators and Proposed Barge Operators Contacted

**Bucanan Marine
Gateway Terminal
Columbia Coastal
Port Authority of New York and New Jersey
American Stevedoring
United States Merchant Marine Academy
Logistec Connecticut, Inc.**

Bibliography

**U.S. Department of Transportation – Maritime Administration.
Environmental Advantages of Inland Barge Transportation. (1994)**

**Bridgeport Port Authority.
Bridgeport Port Development Final Report. (1994)**

**Connecticut Department of Transportation.
Port Connecticut Transportation and International Trade Resource Directory
2000. (2000), 22-24**

**Connecticut Department of Transportation.
CVRR Pier Usage Study. (2000)**

**Greater Bridgeport Regional Planning Agency.
Economic Viability of a Waterborne Barge Service for Bridgeport
Harbor. (2000)**

**South Central Regional Council of Governments.
Coastal Barge Feeder Service Study Options and Opportunities. (2000)**

**Greater Bridgeport Regional Planning Agency.
Port of New London, Can New London be a Transit Container Port? (2001)**